

General

Title

Brain and central nervous system (CNS) cancer: proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection who receive MRI within 3 days (72 hours) of surgical resection.

Source(s)

NHS Scotland, Scottish Cancer Taskforce. Brain and central nervous system cancer clinical quality performance indicators. Edinburgh (Scotland): Healthcare Improvement Scotland; 2016 Jan. 39 p. [24 references]

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection who receive magnetic resonance imaging (MRI) within 3 days (72 hours) of surgical resection.

Note from the National Quality Measures Clearinghouse: This measure is part of the Cancer Quality Performance Indicators (QPIs) collection. For more information, including a complete list of QPI measure sets, please visit the [Healthcare Improvement Scotland Web site](#).

Rationale

Post-operative imaging:

Provides a measurement of surgical performance;

- Helps to determine if further treatment is required;
- Helps determine what further treatment might be appropriate;
- Estimates residual tumour to help target radiotherapy when needed; and
- Helps to assess prognosis.

Imaging should be carried out within 72 hours to enable reliable assessment of the extent of the resection (van den Bent et al., 2009; Ulmer et al., 2006; Cairncross et al., 1985; Sato et al., 1997; Smith et al., 2005). Magnetic resonance imaging (MRI) is the preferred imaging method for patients with glioma.

After this time period, changes in the tumour resection bed confound estimation. Delaying assessment until these changes settle is inappropriate as regrowth of high-grade tumours can occur rapidly and also post-operative treatments such as radiotherapy and chemotherapy are normally instituted rapidly which could further affect the images.

Evidence for Rationale

Cairncross JG, Pexman JH, Rathbone MP, DelMaestro RF. Postoperative contrast enhancement in patients with brain tumor. *Ann Neurol.* 1985 Jun;17(6):570-2. [PubMed](#)

NHS Scotland, Scottish Cancer Taskforce. Brain and central nervous system cancer clinical quality performance indicators. Edinburgh (Scotland): Healthcare Improvement Scotland; 2016 Jan. 39 p. [24 references]

Sato N, Bronen RA, Sze G, Kawamura Y, Coughlin W, Putman CM, Spencer DD. Postoperative changes in the brain: MR imaging findings in patients without neoplasms. *Radiology.* 1997 Sep;204(3):839-46. [PubMed](#)

Smith JS, Cha S, Mayo MC, McDermott MW, Parsa AT, Chang SM, Dillon WP, Berger MS. Serial diffusion-weighted magnetic resonance imaging in cases of glioma: distinguishing tumor recurrence from postresection injury. *J Neurosurg.* 2005 Sep;103(3):428-38. [PubMed](#)

Ulmer S, Braga TA, Barker FG 2nd, Lev MH, Gonzalez RG, Henson JW. Clinical and radiographic features of peritumoral infarction following resection of glioblastoma. *Neurology.* 2006 Nov 14;67(9):1668-70. [PubMed](#)

van den Bent MJ, Vogelbaum MA, Wen PY, Macdonald DR, Chang SM. End point assessment in gliomas: novel treatments limit usefulness of classical Macdonald's Criteria. *J Clin Oncol.* 2009 Jun 20;27(18):2905-8. [PubMed](#)

Primary Health Components

Brain/central nervous system (CNS) cancer; malignant glioma; surgical resection; magnetic resonance imaging (MRI)

Denominator Description

All patients with malignant glioma (with enhancing component on pre-operative imaging), undergoing surgical resection (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of patients with malignant glioma (with enhancing component on pre-operative imaging), undergoing surgical resection receiving magnetic resonance imaging (MRI) within 3 days (72 hours) of surgical resection (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

Unspecified

Extent of Measure Testing

The collection of data is piloted on a small number of patient records using a paper data collection form produced by the Information Services Division (ISD). The aim is to identify any anomalies or difficulties with data collection prior to full implementation. At least one NHS board in each Regional Cancer Network participates in the pilot.

Evidence for Extent of Measure Testing

NHS Scotland. National cancer quality performance indicators: overview of development process. Edinburgh (Scotland): NHS Scotland; 2012 Dec. 7 p.

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory Procedure/Imaging Center

Hospital Inpatient

Hospital Outpatient

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Single Health Care Delivery or Public Health Organizations

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Unspecified

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Timeliness

Data Collection for the Measure

Case Finding Period

Unspecified

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Diagnostic Evaluation

Therapeutic Intervention

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

All patients with malignant glioma* (with enhancing component on pre-operative imaging), undergoing surgical resection

*Malignant gliomas include:

- Glioblastoma multiforme (GBM) and its variants (e.g., gliosarcoma)
- Anaplastic astrocytoma (AA)
- Anaplastic oligodendrogliomas
- Mixed tumours (e.g., oligoastrocytoma, glioblastoma with oligodendroglial component)
- High-grade ependymoma

Exclusions

- Patients unable to undergo a magnetic resonance imaging (MRI) scan, e.g.:
 - Pacemaker or other MRI incompatible implanted device
 - Cerebral aneurysm clip
 - Contraindication to intravenous contrast medium
- Patients who refuse MRI
- Patients undergoing biopsy only

Note: Where it is not possible to image with MRI an attempt should be made to image with computerised tomography (CT).

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Number of patients with malignant glioma (with enhancing component on pre-operative imaging), undergoing surgical resection receiving magnetic resonance imaging (MRI) within 3 days (72 hours) of surgical resection

Exclusions

Patients unable to undergo a MRI scan, e.g.:

Pacemaker or other MRI incompatible implanted device

Cerebral aneurysm clip

Contraindication to intravenous contrast medium

Patients who refuse MRI

Patients undergoing biopsy only

Note: Where it is not possible to image with MRI an attempt should be made to image with computerised tomography (CT).

Numerator Search Strategy

Fixed time period or point in time

Data Source

Electronic health/medical record

Paper medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Prescriptive Standard

Target: 90%

The tolerance within this target is designed to account for situations where patients are deemed unfit to attend for imaging within the stated timeframe.

Evidence for Prescriptive Standard

NHS Scotland, Scottish Cancer Taskforce. Brain and central nervous system cancer clinical quality performance indicators. Edinburgh (Scotland): Healthcare Improvement Scotland; 2016 Jan. 39 p. [24 references]

Identifying Information

Original Title

QPI 7 – early post-operative imaging.

Measure Collection Name

Cancer Quality Performance Indicators (QPIs)

Measure Set Name

Brain and Central Nervous System Cancer

Submitter

NHS Scotland - National Government Agency [Non-U.S.]

Scottish Cancer Taskforce - National Government Agency [Non-U.S.]

Developer

NHS Scotland - National Government Agency [Non-U.S.]

Scottish Cancer Taskforce - National Government Agency [Non-U.S.]

Funding Source(s)

Composition of the Group that Developed the Measure

Brain/Central Nervous System (CNS) Cancer QPI Development Group

Financial Disclosures/Other Potential Conflicts of Interest

Unspecified

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2016 Jan

Measure Maintenance

The Cancer Quality Performance Indicators (QPIs) will be kept under regular review and be responsive to changes in clinical practice and emerging evidence.

Date of Next Anticipated Revision

2017 Aug

Measure Status

This is the current release of the measure.

Measure Availability

Source document available from the [Healthcare Improvement Scotland Web site](#) .

For more information, contact the Healthcare Improvement Scotland at Gyle Square, 1 South Gyle Crescent, Edinburgh, Scotland EH12 9EB; Phone: 0131 623 4300; E-mail: comments.his@nhs.net; Web site: www.healthcareimprovementscotland.org/ .

Companion Documents

The following is available:

NHS Scotland. National cancer quality performance indicators: overview of development process. Edinburgh (Scotland): NHS Scotland; 2012 Dec. 7 p. This document is available from the [Healthcare Improvement Scotland Web site](#) .

NQMC Status

This NQMC summary was completed by ECRI Institute on May 4, 2017. The information was verified by the measure developer on May 23, 2017.

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Production

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